



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/666,921	09/17/2003	Ashok Prabhu	NSCIP278/P05689	6486
22434	7590	01/17/2006	EXAMINER	
BEYER WEAVER & THOMAS LLP P.O. BOX 70250 OAKLAND, CA 94612-0250			CHACKO DAVIS, DABORAH	
			ART UNIT	PAPER NUMBER
			1756	
DATE MAILED: 01/17/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/666,921

Applicant(s)

PRABHU ET AL.

Examiner

Daborah Chacko-Davis

Art Unit

1756

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 November 2005.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-26 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1 is rejected under 35 U.S.C. 102(b) as being anticipated by U. S. Patent No. 6,075,237 (Ciccarelli).

Ciccarelli, in the abstract, and in col 2, lines 3-30, discloses a die fabricated (image sensor), applying a cover glass (lid) on the imaging sensing package (encapsulating the image sensor), wherein the cover glass has a patterned photosensitive layer (epoxy resin), such that the transparent region (region without the opaque layer, reference 28 of figure 3) is directly positioned over the image sensor, and the opaque patterned portion (reference 24 of figure 3) becomes the seal (photosensitive epoxy) upon which the cover glass is mounted (lid mounted onto the die) such that a gap having a dimension equal to the height of the support regions of the lid (reference 18 of figure 3) exists between the image sensor chip and the cover glass (claims 1, 5, 11, 13, 16, 17). Ciccarelli, in col 2, lines 60-65, and in figure 3, discloses that the image sensor (plurality of leads) is electrically coupled to the connector pads (contact bumps on the die) within the cavity (claim 7, 22, 23).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-26, are rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent No. 6,873,024 (Prabhu et al., hereinafter referred to as Prabhu) in view of U. S. Patent No. 2005/0030505 (Miwa).

Prabhu, in the abstract, in col 3, lines 23-67, in col 4, lines 1-50, and in figures 3, 7, 8, and 9, discloses a semiconductor wafer containing an optical imaging die, wherein the wafer includes a plurality of die, each die (less than 0.7mm in thickness) includes an imaging circuitry, mounting a patterned transparent template on each die, wherein each template has patterned die cover regions (reference 22, transparent region), and recess regions (at the periphery of the template including the spacing structures), said template is mounted onto to the die such that the transparent region covers the imaging circuitry; the spacing structures are formed on the die of the wafer upon which the transparent template (epoxy resin is used as the spacing structure, photosensitive adhesive) is mounted so as to form a gap of about 50 microns between the imaging circuitry and the transparent template (claims 1,3, 11, 12, 13, 15-16). Prabhu, in col 4, lines 42-47, in col 5, lines 16-22, and in figure 11, discloses that the patterned transparent template (of the claimed thickness) is singulated, followed by encapsulating (packaging with packaging material such as clear epoxy etc.,) the die and the template using standard packaging

techniques (claims 4, 5, 8, 17, 19). Prabhu, in col 5, lines 10-16, discloses that the die package is a tape automate bond package (claims 6, 18). Prabhu, in col 5, lines 8-16, discloses that the contacts (contact bumps) are electrically coupled to the leads (reference 44 of figure 8), wherein the leads are insulated from one other via polyimide encapsulant present over the die (above the imaging circuitry) (claims 7, 22, 23, 24). Prabhu, in col 5, lines 50-67, discloses that the bond pads on the dies are electrically coupled to the substrate package (solder balls) (claims 9-10, and 25-26).

The difference between the claims and Prabhu is that Prabhu does not disclose that the transparent template pattern is formed by photolithographically patterning the photosensitive layer on the template (claim 2).

Miwa, in [0002], and in [0074], discloses that the photosensitive material coated on the glass plate (transparent template) is photolithographically patterned.

Therefore, it would be obvious to a skilled artisan to modify Prabhu by employing the photolithographic method of patterning the photosensitive material coated template as suggested by Miwa because Miwa in [0074], discloses that employing the claimed method enables the formation of the multiple circuit patterns on a single plate and can be used as a mask in the manufacturing of various devices.

Response to Arguments

5. Applicant's arguments filed November 14, 2005, in regards to claims 1-26, have been fully considered but they are not persuasive. The 102 and 103 rejections made in the previous office action (paper no. 0912) are maintained.

Art Unit: 1756

A) Applicants argue that Ciccarelli does not disclose applying and patterning a photosensitive layer on the lid to create the transparent regions and the support regions.

Ciccarelli, in col 2, lines 7-19, discloses that the preferably epoxy (epoxy is inherently photosensitive) is coated on to the cover glass (transparent, optically transparent, lid), and patterned to form a transparent and support regions.

B) Applicants argue that Prabhu does not teach the fabrication of a lid with support regions having a predetermined height.

Prabhu in col 4, lines 2-5, and lines 34-40, figures 7-9, discloses forming spacing structures (reference 30) on the template (reference 20, support regions) by depositing the epoxy (photosensitive material) on the template and then laminating the template on to the wafer (reference 10, die formed on the wafer).

C) Applicants argue that Prabhu teaches away from the invention because Prabhu teaches that the spacing structures 30 or 32 are formed by dispensing a material onto the die of the wafer.

See argument B).

D) Applicants argue that Mira discloses absolutely nothing about patterning a lid having a transparent region and support regions.

Mira is not depended upon to disclose patterning the lid to form transparent and support regions. Prabhu is depended upon to disclose the formation of a transparent region and support region on the template. Mira is depended upon to disclose patterning the photosensitive material (epoxy).

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daborah Chacko-Davis whose telephone number is (571) 272-1380. The examiner can normally be reached on M-F 9:30 - 6:00. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark F Huff can be reached on (571) 272-1385. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For

Art Unit: 1756

more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

dcd



January 11, 2006.



JOHN A. MCPHERSON
PRIMARY EXAMINER